

What is claimed is:

1. A reciprocating device comprising:

a sealing container;

a reciprocating rod positioned within said sealing container;

a planar spring connected to the displacer rod; and

a spring standoff provided on one end of the sealing container and coupled with said planar spring, said spring standoff having a window in a circumferential surface thereof.

2. The reciprocating device according to claim 1, further comprising:

a cylinder inside said sealing container and filled with a gas;

a displacer housing provided at one end of said sealing container;

a displacer configured to divide an inside of said displacer housing;

a piston configured to move together with said displacer, said piston and said displacer configured to at least one of compress and expand the gas;

a motor configured to drive said piston; and

a regenerator configured to at least one of store and radiate thermal energy;

wherein the reciprocating rod is positioned at an end of the displacer.

3. The reciprocating device according to claim 1, wherein said window comprises a plurality of windows positioned at generally the same interval.

4. The reciprocating device according to claim 1, wherein said window has one of a generally rectangular, round, polygonal and oval configuration.

5. A method for performing a centering process of a reciprocating rod of a reciprocating device, the method comprising:

inserting the reciprocating rod into a housing of the reciprocating device;

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coupling a planar spring with a spring standoff;  
inserting a jig through a window in a circumferential surface of the spring standoff;  
centering the reciprocating rod; and  
coupling the reciprocating rod with the planar spring.

6. A spring standoff for a reciprocating device, the standoff having a generally cylindrical body and comprising:

a window in a circumferential surface of said generally cylindrical body; and  
a flange at each end of said generally cylindrical body, one said flange configured to be coupled to a planar spring of the reciprocating device, and the other said flange configured to be coupled to a sealing container of the reciprocating device;

wherein said generally cylindrical body is configured to generally concentrically accommodate at least a portion of a reciprocating rod coupled to the planar spring of the reciprocating device.

7. The spring standoff according to claim 6, wherein said window has one of a generally rectangular, round, polygonal and oval configuration.

8. The spring standoff according to claim 6, wherein said window comprises at least three windows.